B-8.1.1 Juniper Woodlands

Utah juniper (*Juniperus osteosperrna*) typically dominates this cover class; however, *Artemisia bidentata* ssp. *wyomingensis* and *Artemisia nova* dominate some areas containing junipers. Even when not dominant, these two species were also very abundant on other juniper stands. The areas used to characterize this community indicate that there is not a single species association characterized by the presence of juniper. Other common shrubs include threetip sagebrush, green rabbitbrush, and shrubby buckwheat (*Eriogonum microthecum*). Perennial grasses, including Indian ricegrass, needle-and-thread, and bluebunch wheatgrass typically are abundant. Common forbs include arrowleaf balsamroot (*Balsamorhiza sagitata*), tapertip hawksbeard, Hood's phlox, false yarrow, and ballhead gilia (*Ipomopsis congesta*). The "Lava" and the "Sagebrush/Low Sagebrush/Rabbitbrush on Lava" cover classes may occasionally have juniper trees associated with them. These individual or sparsely associated trees provide nesting sites for raptors and can be important habitat for other organisms.

B-8.1.2 Grasslands

INEEL's grasslands are quite variable, but are dominated by perennial grasses. Nearly pure stands of the robust bunchgrass Great Basin wildrye *(Leymus cinereus)* occur in low-lying areas between lava ridges where deep soils accumulate. Scattered individuals of green or gray rabbitbrush and big sagebrush typically are present in these stands.

Rhizomatous species such as thick-spiked wheatgrass, western wheatgrass, creeping wildrye, or Douglas' sedge (*Carex douglasii*) dominates some INEEL grasslands, while in others, the dominants are bunchgrasses such as Indian ricegrass, bottlebrush squirreltail, needle-and-thread grass, Nevada bluegrass, and bluebunch wheatgrass. Many INEEL grasslands are a mosaic of the two growth forms; patches of rhizomatous grasses are interspersed with areas dominated by bunchgrasses, and shrubs including black sagebrush, big sagebrush, green rabbitbrush, and prickly phlox are locally abundant. Prickly-pear cactus (*Opuntia polyacantha)* is abundant in many of these mixed grassland communities. Common forbs include Hood's phlox, globe mallow, false yarrow, and the native annuals small-flowered mentzelia *(Mentzelia albicaulis),* western tansy-mustard *(Descurainia pinnata),* and western stickseed *(Lappula occidentalis).* A number of alien species are common and sometimes very abundant. These include Jim Hill mustard *(Sisymbrium altissimum),* desert alyssurn *(Alyssum desertorum),* salsify *(Tragopogon dubius),* and cheatgrass *(Bromus tectorum).* These communities usually have high species richness.

Crested wheatgrasses have been introduced on several occasions to control the spread of halogeton *(Halogeton glomeratus),* and to suppress dust after fires have burned the areas near facilities and roadways. Crested wheatgrass establishes well at the INEEL, and the resulting stands are quite stable, effectively resisting invasion by native species (Marlette and Anderson 1986).

B-8.1.3 Brush Steppe

Sagebrush steppe can be separated into two classes: Sagebrush Steppe on Lava and Sagebrush Steppe off Lava. While the vegetation is similar in both classes, the soil tends to differ. Sagebrush Steppe off Lava areas typically have deeper soils and are associated with the flood plain, alluvium deposits, sand dunes, or deposition zones for wind blown materials. Soils in the Sagebrush Steppe off Lava class are darker than soils in Sagebrush Steppe on Lava. Sagebrush Steppe on Lava is found on the darker soils of the southern two-thirds of the INEEL. Cheatgrass is prevalent in the Sagebrush Steppe on Lava communities, but is rare or absent from some of the sagebrush dominated areas off the flows. The presence of cheatgrass allows identification of areas where shallow soils overlay relatively recent basalt flows. Classification of these two classes is difficult and often results in incorrectly identifying one class as the other.

Wyoming big sagebrush or basin big sagebrush dominates these classes. Wyoming big sagebrush is the most abundant sagebrush at the INEEL, but extensive patches of basin big sagebrush occur on the eastern basalt uplands (Shumar 1983a and Shumar 1983b). Certain areas of sagebrush steppe are dominated black sagebrush (*Artemisia nova*) or *Artemisia arbuscula*, but are less common.

Sagebrush steppe has an abundance of perennial grasses similar to those in the grassland communities. Green rabbitbrush, winterfat, prickly phlox, and spiny hopsage are found in addition to sagebrush and perennial grasses. The presence of sagebrush is often the only distinguishing characteristic between the two classes. Sagebrush is killed by fire and must recolonize burned sites from seed. Most perennial grasses and forbs resprout following fire from roots or other organs that are protected below ground. Therefore, these herbaceous species can become the dominants following fire and it may be decades before sagebrush again reaches a high density. Such areas likely will be classified as grasslands (Anderson et al. 1996).

B-8.1.4 Low Shrubs on Lava

These communities occur on basalt ridges and other areas where shallow soils overlay basalt. Black sagebrush, green rabbitbrush, broom snakeweed, Wyoming big sagebrush, winterfat, native bunchgrasses, forbs, and Columbia goldenweed (*Haplopappus acaulis*) are all found to varying degrees with no one plant species dominating this class. These plants can also be found growing on exposed patches of bare lava.

B-8.1.5 Sagebrush—Rabbitbrush

Wyoming big sagebrush, black sagebrush, and green rabbitbrush dominate or co-dominate this class. These communities are found both on and off basaltic flows. These communities quite frequently contain rich understories of perennial grasses, such as cheatgrass (usually found on course-textured soils), and forbs. These communities typically are found in conjunction with big sagebrush steppe.

B-8.1.6 Sagebrush—Winterfat

Wyoming big sagebrush and/or winterfat dominate these communities. Perennial grasses, especially Indian ricegrass, and green rabbitbrush are typically found in these communities. This class occurs on soils derived primarily from lacustrine deposits of ancient Lake Terreton. Cheatgrass seldom is found in these communities. Our vegetation data suggests that these communities are intermediate between the Sagebrush/Green Rabbitbrush communities and Salt Desert Shrub communities. This may reflect a gradient from upland loess soils to the more halomorphic lacustrine soil of the Lake Terreton basin (Anderson et al. 1996).

B-8.1.7 Salt Desert Shrub

Salt desert shrub communities can be found on the Big Lost River and Birch Creek playas and on other playas in the region. The salt desert shrub communities often have a high percentage of bare ground. Members of the chenopod family dominate these areas. Suffrutescent shrubs, shadscale, or winterfat usually dominates the composition of these areas. Nuttall saltbrush or shrubby buckwheat dominates suffrutescent shrub areas. Winterfat is also found in these areas. Shadscale communities are populated with winterfat, green rabbitbrush, and Nuttall saltbush. Winterfat dominates the last community type and is often found with four-wing saltbush (*Atriplex canescens*).

B-8.1.8 Wetlands

Wetlands are only found in one area at the INEEL. The area around the Big Lost River sinks is identified as wetlands. These areas are periodically flooded during years of high precipitation. Part of this area was a cattail *(Typha latifolia)* marsh in the early to mid-1980s. The dominant species over much of the area is common spike-rush *(Eleocharis palustris).* Western wheatgrass becomes more common toward the margins as the wetlands grade into grasslands. Species diversity of these wetlands is very low.

B-8.1.9 Playas, Bare Ground, Disturbed Areas

These areas typically have a high proportion of exposed soil as a consequence of past disturbance or periodic flooding. Some are dominated by the exotic annual summer cypress *(Kochia scoparia);* poverty-weed *(Iva axillaris),* Russian thistle *(Salsola kali),* and verbena *(Verbena bracteata)* are common. Perennial plants are virtually absent from these communities.

Russian thistle dominates other areas within this class. Summer cypress and poverty-weed are common, as is the native shrub, four-wing saltbush. Thick-spiked wheatgrass usually is present. Some areas south of the Radioactive Waste Management Complex are dominated by foxtail *(Hordeum juba-tum).*

This class also includes gravel/borrow pits and gravel covered areas associated with roads and facilities. This cover class includes areas that are primarily barren and have high reflectance.

B-8.1.10 Lava

The lava class is dominated by exposed lava outcrops and rubble. The most extensive areas in the class are the recent lava flow south of the INEEL Main Gate and on the slopes of Middle Butte. Smaller patches are found throughout the large area generally classified as "Sagebrush Steppe on Lava." The vegetation in this class is dominated by *Artemisia tridentata* ssp. *aidentata. Chamaebatiaria millefolia* (fern-bush) and *Chrysothamnus nauseosus* is common. *Chamaebatiaria millefolia* is common on lava flows and along desert canyon walls, but is rare over most of the INEEL. Only four vascular plant species were recorded at the sample plots used for characterizing this cover class.

The lava cover class occasionally has junipers associated with it. The cracks, crevices, and cliffs also provide habitat for raptors, small and large mammals, and reptiles. There is also a greater probability for archaeological finds in these areas.

B-8.2 FAUNA

The INEEL is home to and visited by a wide variety of species including 2 amphibians, 6 fish, 10 reptiles, 184 birds, and 37 mammals. Certain areas of habitat are relatively undisturbed due to the restricted public access within the INEEL boundaries. This has led to a richness of species with the possibility of other species present but not yet recorded.

B-8.2.1 Mammals

Thirty-seven species of mammals have been recorded on the INEEL (VanHorn, Hampton, and Morris 1995). Six species of chiropterans (bats) are present at the INEEL; six carnivores, fourteen rodents, four lagomorphs, and one Merriam's shrew, belongs to the Order Insectivora. The INEEL supports resident populations of mule deer, elk, and pronghorn. Moose, mountain sheep, and mountain lion have been reported, but are species that are not generally found on the INEEL (Reynolds et al. 1986).

Mule deer are considered uncommon and are generally concentrated in the southern and central portion of the INEEL. They exist in greater numbers on the buttes and mountains surrounding the INEEL. At least five herds of elk reside on or frequent the INEEL (Warren 1999). Home ranges for the INEEL elk herds encompass lands surrounding the INEEL. Pronghorn are found throughout the INEEL and are considered abundant. Most pronghorn in southeastern Idaho are migratory. The Townsend's ground squirrel, least chipmunk, Great Basin pocket mouse, Ord's kangaroo rat, western harvest mouse, deer mouse, bushy-tailed wood rat, and montane vole are the most common small mammals on the INEEL. Four species of leporids occur on the INEEL and all but the white-tailed jackrabbit are considered abundant or common (Reynolds et al. 1986).

Raptor as well as bobcat and coyote populations are tied to the number of small rodents and jackrabbits found on the INEEL. The number of black-tailed jackrabbits on the INEEL varies dramatically and periodically from less than 0.5 to more than 142 animals/km^2 (Stoddart 1983). Muskrats and beavers are periodically recorded on the INEEL, but are confined to areas near water. Coyotes and long-tailed weasels are commonly found at the INEEL, while the bobcat and badger are considered uncommon. The spotted skunk is listed as a rare species on the INEEL (Reynolds et al. 1986). The INEEL has two mammalial species federally listed as Category 2, the pygmy rabbit and Townsend's big-eared bat. The Western pipstrelle bat is listed as a species of special concern for the State of Idaho. It is uncertain whether it exists at the INEEL.

B-8.2.2 Birds

One hundred eighty-four different species of birds have been recorded on the INEEL and can be found in Appendix D of the Guidance Manual for Risk Assessment at the INEEL (Van Horn, Hampton, and Morris 1995). Breeding bird surveys have been conducted throughout the site. Twenty-six species of waterfowl (including American coot and common snipe) are found on the INEEL. As many as six upland game birds species have been spotted on the INEEL. Eighty-two species of passerines have been recorded on the INEEL (Reynolds et al. 1986).

The INEEL is used by raptors as a nesting and wintering area. Twenty-two species of hawks, falcons, owls, or vultures have been observed on the INEEL (Reynolds et al. 1986). American kestrels, long-eared owls, American rough-legged hawks, prairie falcons, and golden eagles are known to frequent and even nest on the INEEL. As many as 108 golden eagles and 15 bald eagles have been observed on the INEEL in a single day (Watson 1984). Small rodents and black-tailed jackrabbit populations are closely tied to the number of raptors wintering at the INEEL. The peregrine falcon is a federally listed endangered species. The bald eagle is no longer considered an endangered species, but is a federally listed threatened species. The Bureau of Land Management or the U.S. Forest Service lists six additional species as Idaho special species of concern and/or sensitive.

B-8.2.3 Amphibians and Reptiles

Two amphibian and 10 reptilian species have been observed on the INEEL. The Great Basin spadefoot toad (Spea intermontana) has been found around the Big Lost River, the Big Lost River Sinks, and the spreading areas near the Radioactive Waste Management Complex. The other amphibian observed at the INEEL is the Boreal Chorus Frog (Pseudacris triseriata), which is not as commonly found as the spadefoot toad. Three species of lizards, the Western Skink (Eumeces skiltonianus), and six species of snakes make up the population of reptiles found on the INEEL. There is debate about whether two of the snakes are common to the INEEL or accidental sitings. The Rubber Boa (Charina bottae) was only observed once onsite. The Western Racer (Coluber constrictor) is the other snake in question and has only been found a handful of times.

B-8.2.4 Fish

Six fish species have been identified at the INEEL in the Big Lost River. Rainbow Trout (Salmo gairdneri), Mountain Whitefish (Prosopium williamsoni), and Shorthead Sculpin (Cottus confusus) are considered to be common in the Big Lost River that runs onto the INEEL. Kokanee Salmon (Oncorhynchus nerka), Brook Trout (Salvelinus fontinalis), and Speckled Dace (Rhinichthys osculus) have been found in the Big Lost River, but are not as common. The presence of these fish species is dependent upon the flow of the Big Lost River. Several years the river has not had enough stream flow to reach the INEEL. When enough flow is present, the river can flow as far as the Big Lost Sinks where it disappears underground.

B-8.2.5 Invertebrates

Approximately 740 insect species have been collected on the INEEL many of which (226) have not been identified beyond the family level. The majority of the abundant species are Hymenoptera (wasps and ants), Diptera (flies), including parasitic and predatory forms, and Coleoptera (beetles) (Stafford 1983, 1987; Stafford et al. 1986; Youdie 1986). A diverse insect community is associated with the sagebrush and great basin wildrye communities on the INEEL, and these insects play an important role in the food chains of INEEL ecosystems (Stafford 1983, 1987; Youdie 1986). Aerial photographs show the great abundance of harvester ant mounds found throughout the site. Currently, there are several ongoing studies at the site involving ants. One of these studies is to see if ants are able to penetrate biobarriers that protect buried waste and bring the waste to the surface.

B-8.3 Threatened, Endangered, and Sensitive Species

In 1973 Public Law 93-205, the Endangered Species Act, was enacted and is administered by the U.S. Fish and Wildlife Service (USFWS). As amended, this act provides federal protection for certain species of plants and animals and their critical habitats, and authorizes the secretary of the interior to develop and implement recovery plans for each listed species. These species and subspecies are listed in 50 Code of Federal Regulations 17.11 and 17.12 as either endangered or threatened. The species of concern at the INEEL are listed below with their status. Table B-1 is a list of the threatened and endangered species that may be found on the INEEL.

A comprehensive list of plant and animal species from federal and/or state threatened, endangered, and sensitive lists is presented in Appendix D of the Guidance Manual (VanHorn, Hampton, and Morris 1995). Although species of special concern and sensitive species do not receive legal protection, they are included here because of their presence at the INEEL.

B-8.3.1 Plants

Three comprehensive surveys of rare vascular plants at the INEEL have been conducted. The first was done by Cholewa and Henderson in 1984. More recently surveys were conducted by James Glennon in 1990 and by Karl Holte and James Glennon in 1993. Holte and Glennon made extensive searches of the INEEL and immediate vicinity during the exceptionally wet 1993 growing season. Seven sensitive plants are known to occur at the INEEL, and one Federal Candidate occurs on Big Southern Butte.

Stickly phacelia (*Phacelia inconspicua*) is plant species on the Federal Candidate List. Plains orophaca (*Astragalus gilviflorus*) is catagorized as State Priority 1, being in danger of becoming extinct or extirpated from Idaho in the foreseeable future. Spreading gilia (*Ipomopsis polycladon*) is on the State Priority list 2, which is in danger of becoming Priority 1 if factors contributing to its population decline or habitat degradation or loss continue. Three species are considered State Sensitive: Lemhi milkvetch

Table B-1. Threatened or endangered species, sensitive species, and species of concern that may be found on the INEEL.[a]

Common Name	Scientific Name	Federal Status[b,c]	State Status[c]	BLM Status[c]	USFS[f] Status[c]
Plants					
Lemhi milkvetch	*Astragalus aquilonius*	—	S	S	S
Painted milkvetch[e]	*Astragalus ceramicus var. apus*	3c	R	—	—
Plains milkvetch	*Astragalus gilviflorus*	NL	1	S	S
Winged-seed evening primrose	*Camissonia pterosperma*	NL	S	S	—
Nipple cactus[e]	*Coryphantha missouriensis*	NL	R	—	—
Spreading gilia	*Ipomopsis (=Gilia) polycladon*	NL	2	S	—
King's bladderpod	*Lesquerella kingii var. cobrensis*	—	M	—	—
Tree-like oxytheca[e]	*Oxytheca dendroidea*	NL	R	R	—
Inconspicuous phacelia[d]	*Phacelia inconspicua*	C2	SSC	S	S
Ute ladies' tresses[d]	*Spiranthes diluvialis*	LT	—	—	—
Puzzling halimolobos	*Halimolobos perplexa var. perplexa*	—	M	—	S
Birds					
Peregrine falcon	*Falco peregrinus*	3c	E	—	—
Merlin	*Falco columbarius*	NL	—	S	—
Gyrfalcon	*Falco rusticolus*	NL	SSC	S	—
Bald eagle	*Haliaeetus leucocephalus*	LT	T	—	—
Ferruginous hawk	*Buteo regalis*	C2	SSC	S	—
Black tern	*Chlidonias niger*	C2	—	—	—
Northern pygmy owl[d]	*Glaucidium gnoma*	—	SSC	—	—
Burrowing owl	*Athene cunicularia*	C2	—	S	—
Common loon	*Gavia immer*	—	SSC	—	—
American white pelican	*Pelicanus erythrorhynchos*	—	SSC	—	—
Great egret	*Casmerodius albus*	—	SSC	—	—
White-faced ibis	*Plegadis chihi*	C2	—	—	—
Long-billed curlew	*Numenius americanus*	3c	—	S	—
Loggerhead shrike	*Lanius ludovicianus*	C2	NL	S	—
Northern goshawk	*Accipiter gentilis*	C2	S	—	S
Swainson's hawk	*Buteo swainsoni*	—	—	S	—
Trumpeter swan	*Cygnus buccinator*	C2	SSC	S	S
Sharptailed grouse	*Tympanuchus phasianellus*	C2	—	S	S
Boreal owl	*Aegolius funereus*	—	SSC	S	S

Table B-1. (continued).

Common Name	Scientific Name	Federal Status[b,c]	State Status[c]	BLM Status[c]	USFS[f] Status[c]
Flammulated owl	*Otus flammeolus*	—	SSC	—	S
Mammals					
Gray wolf[g]	*Canis lupus*	LE/XN	E	—	—
Pygmy rabbit	*Brachylagus (=Sylvilagus) idahoensis*	C2	SSC	S	—
Townsend's Western big-eared bat	*Corynorhinus (=Plecotus) townsendii*	C2	SSC	S	S
Merriam's shrew	*Sorex merriami*	—	S	—	—
Long-eared myotis	*Myotis evotis*	C2	—	—	—
Small-footed myotis	*Myotis ciliolabrum (=subulatus)*	C2	—	—	—
Western pipistrelle[d]	*Pipistrellus hesperus*	NL	SSC	—	—
Fringed myotis[d]	*Myotis thysanodes*	—	SSC	—	—
California myotis[d]	*Myotis californicus*	—	SSC	—	—
Reptiles and amphibians					
Northern sagebrush lizard	*Sceloporus graciosus*	C2	—	—	—
Ringneck snake[d]	*Diadophis punctatus*	C2	SSC	S	—
Night snake[e]	*Hypsiglena torquata*	—	—	R	—
Insects					
Idaho pointheaded grasshopper[d]	*Acrolophitus punchellus*	C2	SSC	—	—
Fish					
Shorthead sculpin[d]	*Cottus confusus*	—	SSC	—	—

a. This list was compiled from a letter from the U.S. Fish and Wildlife Service (USFWS) (1997) for threatened or endangered, and sensitive species listed by the Idaho Department of Fish and Game (IDFG) Conservation Data Center (CDC 1994 and IDFG web site 1997) and Radiological Environmental Sciences Laboratory documentation for the INEEL (Reynolds et al. 1986).

b. The USFWS no longer maintains a candidate (C2) species listing, but addresses former listed species as "species of concern" (USFWS 1996). The C2 designation is retained here to maintain consistency between completed and ongoing INEEL Ecological Risk Assessments (ERAs).

c. Status codes: INPS=Idaho Native Plant Society; S=sensitive; 2=State Priority 2 (INPS); 3c=no longer considered for listing; M=State of Idaho monitor species (INPS); NL=not listed; 1=State Priority 1 (INPS); LE=listed endangered; E=endangered; LT=listed threatened; T = threatened; XN = experimental population, nonessential; SSC=species of special concern; and C2 = see item b, formerly Category 2 (defined in CDC 1994). BLM=Bureau of Land Management; R = removed from sensitive list (nonagency code added here for clarification).

d. No documented sightings at the INEEL; however, the ranges of these species overlap the INEEL and are included as possibilities to be considered for field surveys.

e. Recent updates that resulted from Idaho State Sensitive Species meetings (BLM, USFWS, INPS, and USFS) - (INPS 1995, 1996, and 1997).

f. U.S. Forest Service (USFS) Region 4.

g. Anecdotal evidence indicates that isolated wolves may occur on the INEEL. However, no information exists to substantiate hunting or breeding onsite (Morris 1998). Currently under consideration for delisting.

(*Astragalus aquilonius*), Wing-seeded evening-primrose (*Camissonia pterosperma*), and Oxytheca (*Oxytheca dendroidea*). These species could be downgraded to Priority 1 or 2 without active management or the removal of threats. Nipple coryphantha (*Escobaria missouriensis*) and Puzzling halimolobos (*Halimolobos perplexa* var. *perplexa*) are both on the State Monitor List making them uncommon on the INEEL, but with no identifiable threats. Cholewa and Henderson (1984) originally listed Painted milkvetch (*Astragalus ceramicus* var. *apus*), Large flowered gymnosteris (*Gymnosteris nudicaulis*), and King's bladderpod (*Lesquerella kingii* var. *cobrensis*) on the State/Federal Lists, but have since been removed.

B-8.3.2 Animals

The only species at the INEEL currently recognized as threatened or endangered under the Endangered Species Act are the bald eagle, a winter visitor, and the peregrine falcon. The bald eagle was recently downgraded from endangered to threatened. The peregrine falcon remains endangered. The ferruginous hawk, white-faced ibis, black tern, northern goshawk, pygmy rabbit, and the Townsend's western big-eared bat are all candidates for the Federal list. These candidate species are those for which the USFWS has information suggesting that a change in status to threatened or endangered may possibly be appropriate, but for which conclusive data are not available.

The State of Idaho recognizes two separate classes of rare fauna: species of special concern and threatened and endangered wildlife. Species of special concern known to exist at the INEEL include the common loon, American white pelican, ferruginous hawk, Northern pygmy owl, California myotis, merlin, and great egret (Moseley and Groves 1992).

B-9. DEMOGRAPHY AND LAND USE

B-9.1 Demography

Populations potentially affected by WAGs 6 and 10 activities include government, contractor, and subcontractor personnel employed at the INEEL, Shoshone-Bannock Tribal members whose aboriginal homelands included the INEEL area, ranchers who graze livestock in areas on or near the INEEL, occasional hunters on or near the INEEL, highway travelers, and residential populations in neighboring communities. No resident populations are located within the INEEL Site boundary, and no residents are located in the vicinity of WAGs 6 or 10 (Figure B-18).

B-9.1.1 On-Site Populations

The nine separate INEEL facilities include approximately 450 buildings and more than 2,000 support facilities. In fiscal year 1998, the INEEL employed 8,130 contractor and government personnel (DOE-ID 1998). Facilities within WAGs 6 and 10 are nearly all on inactive status. The only employees who regularly work there are tour guides who escort visitors through the EBR-I Visitors Center from Memorial Day to Labor Day. Employee totals at other INEEL facilities include approximately 750 at ANL-W, 813 at CFA, 130 at PBF, 300 at TAN, 450 at TRA, 213 at RWMC, 1,100 at NRF, and 1,060 at INTEC (DOE-ID 1997). In addition, more than 3,000 employees, nearly 40% of the INEEL workforce, support and administer INEEL work from numerous offices, research laboratories, and support facilities in the city of Idaho Falls (DOE-ID 1997).

B-9.1.2 Off-Site Populations

Five counties border the INEEL: Bingham, Bonneville, Butte, Clark, and Jefferson. Major communities include Blackfoot and Shelley in Bingham County, Ammon and Idaho Falls in Bonneville County, Arco in Butte County, and Rigby in Jefferson County. Population estimates for the counties surrounding the INEEL and the largest population centers in these counties are shown in Table B-2.

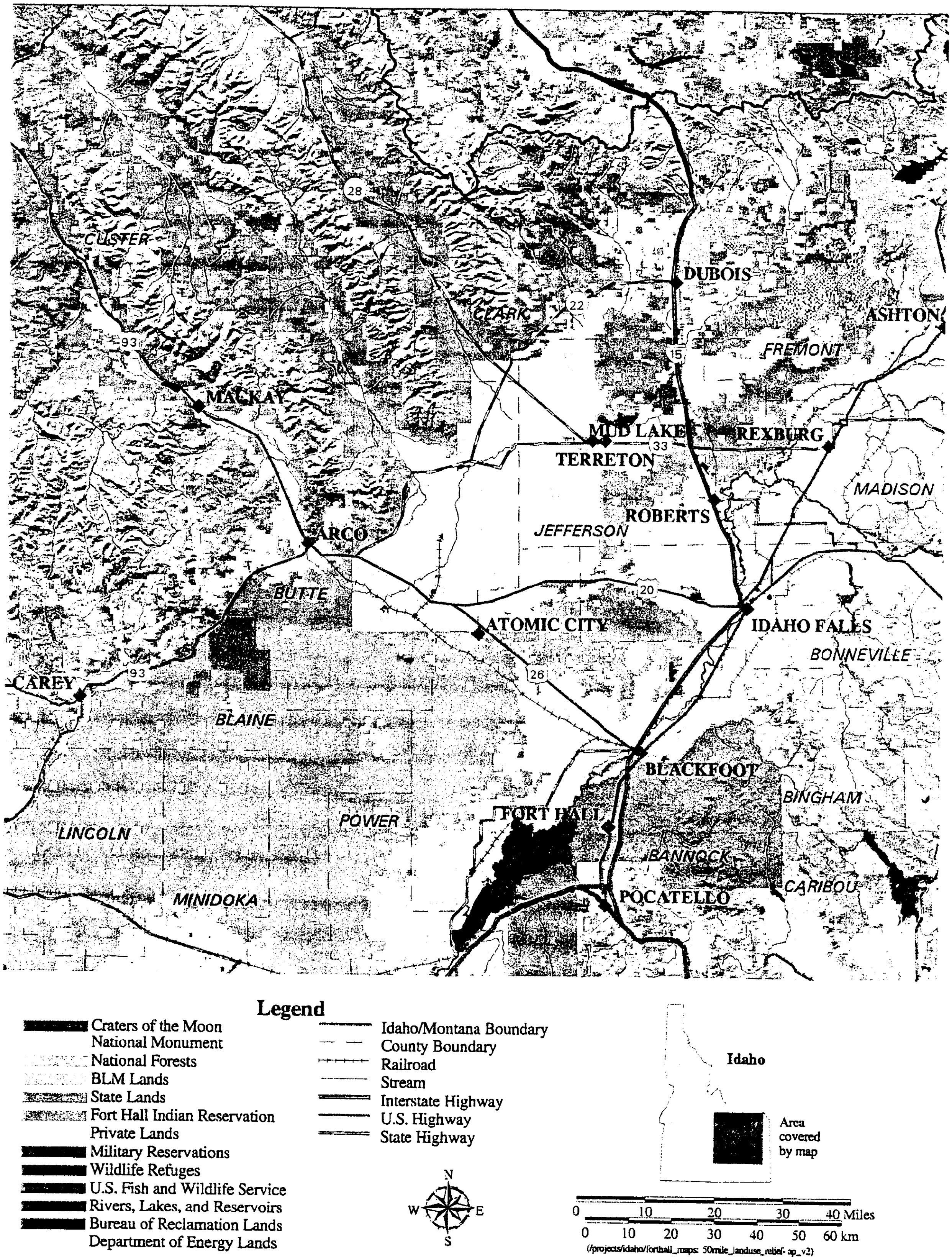

Figure B-18. Land ownership distribution in the vicinity of the INEEL and on-Site areas open for permit grazing.

Table B-2. The 1996 population estimates for counties surrounding the INEEL and selected communities.[a]

Location	Population Estimate
Bingham County	41,188
Blackfoot	10,406
Shelley	3,803
Clark County	822
Bonneville County	79,531
Ammon	5,849
Idaho Falls	48,079
Butte County	3,008
Jefferson County	18,786
Rigby	2,703

a. Source: Idaho Department of Commerce, July 1998.

The INEEL is also included within the ancestral homeland of the Shoshone-Bannock Tribes. The Fort Hall Indian Reservation, established by the 1868 Fort Bridger Treaty, now encompasses approximately 544,000 acres of land to the southeast of the INEEL. The land base of the reservation is 96.6% Indian-owned, either held in trust by the Bureau of Indian Affairs or owned by individual tribal members. The total resident population of the Reservation is 5,893 people; 4,473 of these individuals are enrolled tribal members and the remaining (1,420) people are nontribal members, or non-Indians (Thompson 2000).

B-9.2 Land Use

B-9.2.1 Current Land Use

The BLM classifies INEEL land as industrial and mixed use (DOE 1991). The current primary INEEL land uses are related to nuclear research, environmental engineering, protection, and remediation, as well as waste management and minimization. Virtually all the work at the INEEL is performed within the Site's primary facility areas (e.g., INTEC and TRA). Approximately 2% (4,600 ha [11,400 acres]) of the Site is used for building and support structures totaling 279,000 m^2 (3,000,000 ft^2) of floor space and supporting infrastructure operations. Large tracts of largely undisturbed land are reserved as buffer and safety zones around each of the main facility areas on the INEEL.

The relatively undisturbed and undeveloped buffer zones are currently used for environmental research, ecological preservation, sociocultural preservation, grazing, and some forms of recreation (DOE-ID 1997). In 1975, the area was designated as a National Environmental Research Park, to serve as a controlled outside laboratory where scientists can study environmental changes caused by human activities. A number of INEEL facilities are capable of producing stresses on the environment. Opportunities for significant research exist in Site-wide studies of these stresses and potential mitigative measures. A substantial body of geological, hydrological, wildlife, vegetation, cultural, and meteorological information has been collected for more than 40 years.

Approximately 1,295 km^2 (500 mi^2)/121,410–141,645 ha (300,000–350,000 acres) of the buffer zone is used as grazing land for cattle and sheep (DOE-ID 1991). The DOE and the U.S. Department of the Interior mutually agree on the acreage allocated for grazing in this area. The U.S. Department of the Interior administers the area through BLM grazing permits. Grazing is not allowed within 3.2 km (2 mi) of any nuclear facility, and dairy cattle are not permitted. The U.S. Sheep Experiment Station, located approximately 42.6 km (26.5 mi) northeast of the Site, uses a 364-ha (900-acre) portion of the INEEL as a winter feed lot for approximately 5,000 sheep.

Depredation hunts, managed by the Idaho Department of Fish and Game, are permitted on-Site during selected years. Hunters are allowed 0.8 km (0.5 mi) inside the INEEL boundary on portions of the northeastern and western borders of the Site (Hull 1989). Hunting is strictly prohibited on the remainder of the INEEL.

The natural and cultural resources of the INEEL area are of great importance to the Shoshone-Bannock Tribes. Because the INEEL is included in their original aboriginal territories, it contains a wide variety of resources and areas that directly reflect tribal cultural heritage and native landscape ecology. A memorandum of agreement between DOE and the Shoshone-Bannock Tribes (DOE-ID 1994) allows tribal members free access to selected areas of the INEEL so that they can continue to exercise traditional cultural activities and educate tribal members. In addition, a working agreement between the DOE and the Tribes promotes Tribal involvement in a wide variety of DOE activities, including the INEEL cultural resource management program (DOE-ID 1992).

State Highways 22, 28, and 33 cross the northeastern portion of the Site, and U.S. Highways 20 and 26 cross the southern portion. The general public uses a total of 145 km (90 mi) of paved highways that pass through the INEEL (DOE 1991). The Union Pacific Railroad also traverses the southern portion of the Site passing through 23 km (14 mi) of INEEL lands. A government-owned railroad spur runs from the Union Pacific tracks through CFA to NRF, and a second spur from the Union Pacific tracks runs to RWMC.

In the counties surrounding the INEEL, approximately 45% of the land is agricultural, 45% is open land, and 10% is urban (DOE 1991). Livestock uses include production of sheep, cattle, hogs, poultry, and dairy cattle (Bowman et al. 1984). The major crops produced on land surrounding the INEEL are wheat, alfalfa, barley, potatoes, oats, and corn. Sugar beets are grown within about 64 km (40 mi) of the INEEL in the vicinity of Rockford, Idaho, in central Bingham County and southeast of the INEEL (Table B-3). Ranching and agriculture are also important activities at the nearby Fort Hall Reservation and the Tribes also manage a herd of 250 – 300 buffalo, which graze along the Snake River Bottoms within the boundaries of the Reservation. The meat and other products (i.e., robes, heads, and skulls) from these animals are used for ceremonial activities, local functions, and are sold to the public (Shoshone-Bannock Tribal Cultural Committee 1999).

Private individuals or the U.S. government owns most of the land directly adjacent to the INEEL boundary. The BLM administers most of the U.S. government property in the area.

B-9.2.2 Future Land Use

Future land use is addressed in the INEEL future land-use scenarios document (DOE-ID 1995) and in the INEEL Comprehensive Facility and Land Use Plan (DOE-ID 1997). Because of the uncertainty in developing land-use scenarios, assumptions were made for defining factors such as development pressure, advances in research and technology, and ownership patterns in these planning documents. The following assumptions for the INEEL apply to Operable Unit 10-04:

Table B-3. Acreage of major crops harvested in counties surrounding the INEEL (1994–95).[a]

County	Wheat	Alfalfa	Barley	Potatoes	Sugarbeets	Oats	Silage Corn
Bingham	129,700	52,300	26,700	65,800	11,500	600	—
Bonneville	59,500	43,100	61,100	37,900	—	500	—
Butte	8,700	32,400	15,600	3,400	—	500	—
Clark	11,700	16,500	1,000	12,500	—	200	—
Jefferson	44,600	92,100	49,000	26,600	—	800	1,400

a. Source: Idaho 1996.

- The INEEL will remain under government ownership and control for at least the next 100 years.

- The life expectancy of current and new facilities is expected to range between 30 and 50 years. The decontamination and dismantlement process will commence following closure of a facility if a new mission for the facility is not determined.

- No residential development (e.g., housing) will occur within the INEEL boundaries for the next 100 years.

- No new major, private developments (residential or nonresidential) are expected in areas adjacent to the INEEL.

Generally, future land use within the INEEL is expected to remain essentially the same as current use. That is, the INEEL is likely to continue as an industrial and research facility (DOE-ID 1997), with moderate growth expected for the next two decades. Local Native American populations will continue to maintain an interest in the natural and cultural resources located there. Specific future uses of Waste Area Group 10 will likely include limited grazing, industrial uses, Native American traditional activities within selected areas, and limited recreational use. Within Waste Area Group 6, the EBR-I site will remain recreational and industrial and the BORAX site will remain industrial for a minimum of 100 years. Other less likely INEEL land uses include agriculture and the return of on-Site areas to their natural, undeveloped state.

B-9.3 Water Use and Supply

B-9.3.1 On-Site

Production wells to the SRPA are the source of all water used at the INEEL. Approximately 8 million m^3/year (282 million ft^3/year) are drawn from the 30 on-Site production wells (DOE 1991). Active production wells are located at CFA, RWMC, ANL-W, TAN, NRF, TRA, and INTEC.

B-9.3.2 Off-Site

Upstream of the INEEL, the Big Lost River, Little Lost River, and Birch Creek are used as sources of water for agriculture. In years of high flow, Birch Creek terminates at a playa near the north end of the Site. The Little Lost River terminates at a playa just north of the central northwestern boundary of the

INEEL. The Big Lost River flows onto the INEEL near the Sites southwestern corner, bends to the northeast, and flows northeastward to the Big Lost River playas. The surface water that reaches the INEEL is not used for any purpose. No surface-water streams flow off the INEEL with the potential exception of diverted water exiting Spreading Area D during extremely wet or high water conditions.

Regionally, approximately 1.8 billion m^3/yr (63 billion ft^3/yr) of water is drawn from the aquifer in the ESRP for agricultural use (DOE 1991). Most cattle and sheep grazing in the vicinity of the INEEL are near wells or spring developments. Drinking water in the region is obtained almost exclusively from the aquifer.

B-10. REFERENCES

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